*Formulario*

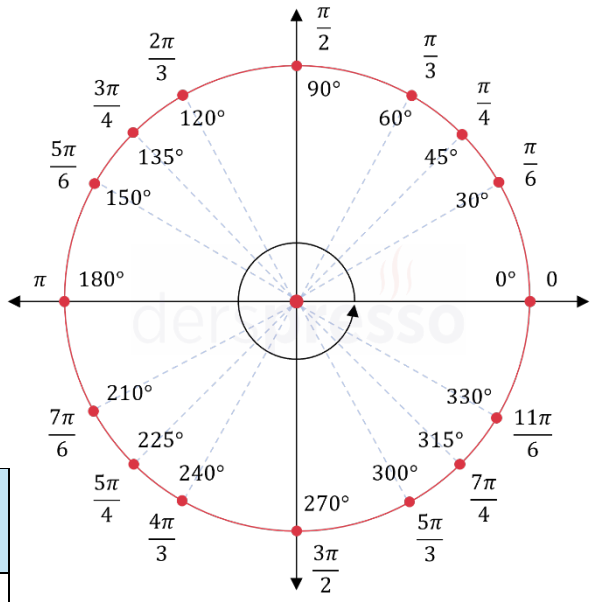
*Numeros Complejos*

| *Potencias de i* | *Modulo de un complejo* |
|---|---|
| $i^1 = i$ | $z = a + bi$ |
| $i^2 = -1$ | $\|z\| = r = \sqrt{a^2 + b^2}$ |
| $i^3 = -i$ | *Conjugado* |
| $i^4 = 1$ | $z = a + bi \rightarrow \bar{z} = a - bi$ |
| $i^n = i^{4(m)+q}$ ; $0 \leq q <$ ; $m, q \in \mathbb{Z}$ | $\theta = \arctan\left(\frac{b}{a}\right)$ $0 \leq \theta \leq 2\pi$ |

| *Operaciones basicas* | $z = a + bi$ ; $w = c + di$ |
|---|---|
| *Suma* | $z + w = (a + c) + (b + d)i$ |
| *Resta* | $z - w = (a - c) + (b - d)i$ |
| *Multiplicación* | $zw = (ac - bd) + (ad + bc)i$ |
| *División* | $\frac{z}{w} = \frac{(a+bi)}{(c+di)} \cdot \frac{c-di}{c-di} = \frac{(ac+bd)+(bc-ad)i}{c^2+d^2}$ |

| *Formas de un complejo* | |
|---|---|
| *Forma Rectangular* | $z = a + bi$ |
| *Forma exponencial* | $z = re^{\theta i}$ |
| *Forma polar* | $z = r(\cos\theta + \sin\theta\, i)$ |

| *Potencia de un complejo* | $z^n = r^n e^{n\theta i}$ ; $n \in \mathbb{Z}$ |
|---|---|
| *Raiz de un complejo* | $z^{\frac{1}{n}} = r^{\frac{1}{n}} e^{\frac{(\theta+2k\pi)i}{n}}$ ; $k = 0,1,2,\ldots,n-1$ |




| *Conversiones* | |
|---|---|
| *Polar a Rectangular* | $\begin{cases} Re = a = r\cos\theta \\ Im = b = r\sin\theta \end{cases} \rightarrow = a + bi$ |
| *Multiplicacion y division en forma exponencial* | |
| $z_1 z_2 = r_1 r_2 e^{(\theta_1 - \theta_2)i}$ | |
| $\frac{z_1}{z_2} = \frac{r_1}{r_2} e^{(\theta_1 - \theta_2)i}$ | |

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